with a plurality of rare earth or transition elements.

C3 cont.

7. The LED of claim 14, wherein said substrate is doped with a plurality of impurities from the group consisting of chromium, titanium, iron, erbium, neodymium, praseodymium, europium, thulium, ytterbium and cerium.

C4

9. A light emitting diode (LED), comprising:

an active layer;

a pair of oppositely doped layers on opposite sides of said active layer which cause said active layer to emit omnidirectional light at a predetermined wavelength in response to an electrical bias across said doped layers; and

a doped substrate, said active and doped layers disposed successively on said substrate such that said substrate absorbs at least some of said light from said active layer and re-emits omnidirectional light at a different wavelength, said LED emitting a combination of light from said substrate and said active layer, wherein said active layer emits yellow light and said substrate comprises sapphire doped with chromium, said substrate absorbing some of said yellow light and re-emitting red light.

C5 rubez7

14. A light emitting diode (LED), comprising:

an active region;

a pair of oppositely doped layers on opposite sides of said active layer which cause said active region to emit omnidirectional light at a predetermined wavelength in response to an electrical bias across said doped layers; and

a doped substrate, said active region and doped

C5 cont.

layers disposed successively on said substrate such that said substrate absorbs at least some of said light from said active region, said substrate doped with a plurality of impurities such that it absorbs the light of said active layer and re-emits more than one color of omnidirectional light.

15. The LED of claim 14, wherein said active region emits UV light and said substrate is doped throughout with chromium, titanium, and cobalt, said doped substrate absorbing said UV light and emitting red, green, and blue light.

amd E3

16. The LED of claim 14, wherein said active region emits UV light, and said substrate is doped with a plurality of rare earth or transition elements in a plurality of separate color centers that each absorbs UV light and re-emits a different color of light.

C6

24. The LED of claim 14, wherein said doped substrate is doped using solid state diffusion, ion implantation, beam evaporation, sputtering, or laser doping.

amd E4

25. (Amended) A method for generating light from a solid state light emitting device, comprising:

providing a light emitting diode having an active layer surrounded by a pair of oppositely doped layers, all of which are disposed on a doped substrate that is doped with a plurality of impurities;

exciting an omnidirectional optical emission from said active layer within a first wavelength range;

applying at least a portion of said optical emission to stimulate emission from said doped substrate within

C6 cont.

different wavelength ranges depending on said plurality of impurities; and

transmitting a combination of said optical emission and substrate emission as said LED's light.

C7

27. The method of claim 25, wherein said substrate is doped with a plurality of rare earth or transition elements.

28. The method of claim 25, wherein said substrate is doped with a plurality of impurities from the group consisting of chromium, titanium, iron, erbium, neodymium, praseodymium, europium, thulium, ytterbium and cerium.

29. The method of claim 25, wherein said doped substrate is doped using solid state diffusion, ion implantation, beam evaporation, sputtering, or laser doping.

NEW

30. A light emitting diode (LED), comprising:

a plurality of active layers each of which is capable of emitting light at a predetermined wavelength;

a means for selectively causing each of said plurality of active layers to emit omnidirectional light alone or in combination with others of said plurality of active layers; and

a doped substrate, said plurality of active layers arranged vertically on said substrate such that said substrate absorbs at least some of said light from at least one of said plurality of active layers and re-emits omnidirectional light at a different wavelength.

C7 cont.

31. The LED of claim 30, that emits a combination of light from said plurality of active layers and said substrate.

C8

33. The LED of claim 30, wherein each of said plurality of active layers comprises multiple quantum wells, single quantum wells or double heterostructures.

34. The LED of claim 30, wherein said substrate comprises a material from the group consisting of sapphire, spinel, silicon carbide, gallium nitride, quartz YAGI, garnet, lithium gallate, lithium niobate, zinc oxide, and oxide single crystal.

35. The LED of claim 30, wherein said substrate is doped with at least one rare earth or transition element.

36. The LED of claim 30, wherein said substrate is doped with at least one impurity from the group consisting of chromium, titanium, iron, erbium, neodymium, praseodymium, europium, thulium, ytterbium and cerium.

AMEND

37. The LED of claim 30, wherein the light emitting from said LED comprises the light emitting from at least one of said plurality of active layers or the light emitting from at least one of said plurality of active layers in combination with the light emitted from said doped substrate.

38. The LED of claim 30, wherein said plurality of active layers comprises three active layers emitting blue, green and UV light respectively, said substrate comprising sapphire doped with chromium which absorbs said UV light and re-emits red light, said LED emitting blue, green, UV

C8 cont.

and red light from said substrate, in a white light combination, when all said active layers are emitting.

39. The LED of claim 30, wherein said plurality of active layers comprises three active layers emitting blue, green and UV light respectively, wherein each of said active layers can selectively emit light, said LED emitting primarily red, green, or blue light when one of said active layers is emitting, or said LED emitting primarily purple, aqua, yellow, or white light when more than one of said active layers is emitting.

40. The LED of claim 30, wherein said plurality of active layers comprises two active layers emitting blue and yellow light respectively, said substrate doped with chromium such that it absorbs at least some of said yellow light and emits red light.

41. The LED of claim 30, wherein said plurality of active layers emit one color of light, said substrate doped throughout with a plurality of impurities such that said substrate absorbs the light from said active layers, and re-emits more than one color of light.

42. The LED of claim 30, wherein said plurality of active layers emit UV light and said substrate is doped throughout with chromium, titanium, and cobalt, said doped substrate absorbing said UV light and emitting red, green, and blue light.

43. The LED of claim 30, wherein said plurality of active layers emit UV light, and said substrate is doped by one or more rare earth or transition element in a plurality of

C 8 cont.

separate color centers each of which absorbs UV light and re-emits a different color of light.

44. The LED of claim 43, further comprising a means for selectively applying a bias to a portion of said plurality of active layers above each of said plurality of color centers causing said active layer to emit light that is primarily absorbed by said color center below said selectively biased portion of said active layer and re-emitted as a different color.

C 9

46. The LED of claim 30, wherein said plurality of active layers emit blue light and UV light, said substrate absorbing at least some of said UV light and re-emitting red light, said LED further comprising downconverting material around the surface of said LED that absorbs some of said blue light emitting from that surface and re-emits yellow light.

47. The LED of claim 30, further comprising electrical circuitry integrated with said LED on a common substrate.

Please delete claims 1-3, 8, 18, 32 and 45.

Please add the following claims:

C 10

52. The LED of claim 16, further comprising a means for selectively applying a bias to a portion of said active region above each of said plurality of color centers causing said active layer to emit light that is primarily absorbed by said color center below said selectively biased portion of said active layer and re-emitted as a different color.

C 10 cont.

53. The LED of claim 52, wherein said oppositely doped layers comprise an n-type and a p-type layer wherein said p-type layer is the top layer of said LED and said n-type layer is between said active region and said substrate, and wherein said means for selectively applying said bias comprises a contact to said n-type layer and a plurality of contacts to said p-type layer, each of said plurality of p-type contacts arranged over a respective one of said plurality of color centers.

54. The LED of claim 30, wherein said means for causing each of said plurality of active layers to emit light comprises an n-type layer and a plurality of p-type layers, said n-type layer disposed between the first of said vertically arranged active layers and said substrate, said p-type layers and successive active layers alternating on said first of said active layers, with a p-type layer being the top layer, said plurality of active layers separately emitting light by causing a bias to be applied across said n-type layer and one of said plurality of p-type layers.

55. The LED of claim 54, wherein said means for causing each of said plurality of active layers to emit light further comprises an n-type layer contact and a plurality of p-type layer contacts, said n-type layer contact contacting said n-type layer and each of said plurality of p-type contacts contacting a respective on of said plurality of p-type layers.